

## To Evaluate the Outcome of Endoscopic Removal of 3<sup>rd</sup> Ventricle Colloid Cyst

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### ABSTRACT

**Objective:** To analyze the outcome of 3<sup>rd</sup> ventricle colloid cyst removal by endoscopic approach.

**Material and Methods:** It is a prospective observational case series study. About 11 patients of third ventricle colloid cyst were included. Site of the study was Neurosurgery B department, Lady Reading Hospital, Peshawar. Study duration was from July 2015 to June 2017. All routine investigations were done including CT brain and MRI. The clinical presentation, radiological findings, post-surgery outcome was analyzed. Endoscopic approach was applied in all cases using a rigid endoscope through right pre-coronal burr hole.

**Results:** our study consisted of total 11 patients. Headache and giddiness were the most common presentations ( $n = 9$ ). 5 patients had change in vision. 2 patients suffered ataxia. One patient presented with urinary incontinence. Post-operative hydrocephalus was observed in only one patient. no recurrence was noted on follow-up visits,

**Conclusions:** Endoscopic approach to colloid cyst treatment is safe and effective with low complications rate.

### BACKGROUND

Colloid cysts are fluid filled non neoplastic tumors of brain. These cysts are rare developmental malformation and not a true neoplasm. They account for 15 to 20% of ventricular mass lesions.<sup>1</sup> The incidence remains three individuals per million people per year.<sup>2</sup>

Colloid cysts can occur at all ages but usually present clinically at the age of 20 to 60. Colloid cysts are more common in men than women. Usually they are asymptomatic and therefore found incidentally on radiology but in some instances they may lead to rapid neurological deterioration and death due to herniation secondary to acute hydrocephalus. So, early diagnosis and recognition of colloid cyst is important to reduce the mortality associated with it.<sup>1</sup> Size of the cyst is variable and commonly range from 1 to 2 in cm diameter whereas larger cysts of more than 3cm diameter have also been reported in previous studies. Colloid cysts are rare in children below 10 and only 1-2% cases have been reported at this age.<sup>3</sup>

Colloid cysts usually occur anteriorly in third ventricle. There is always a risk of impedance of cerebrospinal flow due to the obstruction of foramen of Monro as the cyst enlarges, this result in dilated lateral ventricles secondary to hydrocephalus.<sup>4</sup> The common presenting complains can include headache, gait disturbance, altered mental status, vomiting, nausea, changes in vision, emotional changes, personality changes, and increased somnolence.<sup>5</sup> hydrocephalus and papilledema are relatively common in symptomatic patients and about half patients present with these findings.<sup>6</sup>

More recently it is also proposed that asymptomatic patients with a colloid cyst < 7 mm may be managed conservatively. Others, based on natural history and long-term follow-up studies, have suggested that colloid cysts < 10 mm could be managed expectantly. Many physicians however are often unwilling to offer conservative treatment to patients, especially if colloid cyst is larger than 10 mm in size due to reports of sudden death.<sup>7</sup>

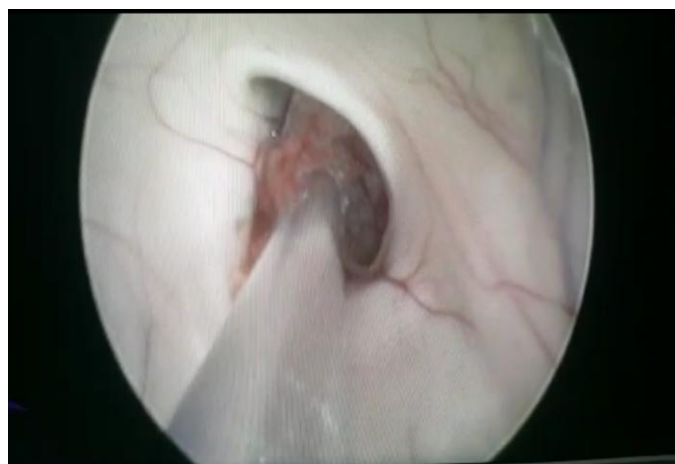
In symptomatic patients, mortality ranges from 3 to 12% and Overall mortality irrespective of symptoms stands to be about 1.2%. More than half of the symptomatic patients need surgical intervention. Indications for surgical treatment include large size of colloid cyst on radiology, patient being symptomatic or the presence of hydrocephalus.<sup>4</sup> Surgical management has the risk of complications ranging from post op fits, infection, hemorrhage, infarct and hemiplegia to impaired memory.

Complications from all types of surgical management include seizures, hematoma, infection, venous infarct, memory deficit, mutism, and hemiplegia. Effectiveness of surgical approaches has been under debate and no consensus is approached.<sup>8</sup>

Besides all the literature available, we wanted to analyze the outcome of 3<sup>rd</sup> ventricle colloid cyst removal by endoscopic approach, in our local settings.

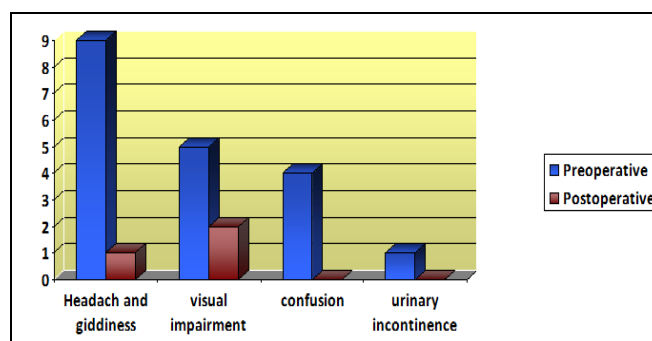
## MATERIAL AND METHODS

This study was conducted in Neurosurgery B department LRH Peshawar from July 2015 to June 2017, it is a prospective observational case series including 11 patients of third ventricle colloid cyst. All routine investigations were done including CT brain and MRI. The clinical presentation, radiological findings, post-surgery outcome were analyzed. Endoscopic approach was applied in all cases using a rigid endoscope through right precoronal bur hole. Patients were followed postoperatively at 3 months and 6 months. Written consent were taken from patients, all data was entered via spss version 20 and analyzed in the form of charts and tables.

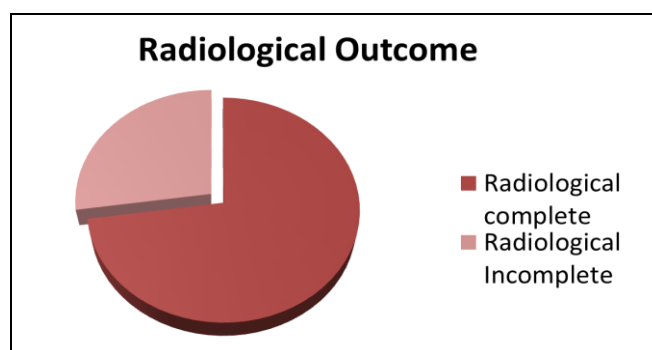


## RESULTS

A total of 11 patients were included in the study. median duration of hospital stay was 4.5 days. Headache and giddiness were the most common presentations (n = 9). 5 patients had visual impairment to some extent while 2 patients suffered ataxia and one patient presented with urinary incontinence.



Mean duration of signs and symptoms prior to hospital presentation was 3 days. male and female ratio was 1:1.2 (male n = 5, female n = 6). Most common age involved was between 30-40 (n = 6) (ranged between 16 years to 51 years), on imaging size of the cyst ranged from 7mm to 15mm in 7 patients while only 4 presented with more than 15mm cyst. Endoscopic colloid cyst aspiration was used in all the patients (n = 11). Removal was radiological complete in 8 patients and incomplete in 3 patients. There was no recurrence at follow-ups. 1 patient presented with post op hydrocephalus and one patient with local wound infection at operating site.



## DISCUSSION

Headache is the most common presenting complain and is presenting symptom in 68-100% of cases.<sup>7</sup> Our study reports its presence among 81% cases (n = 9).

Headache associated with colloid cyst differs from other causes of headache as they are intermittent, at times intense and relieved with lying down. It is believed to be the result of a ball valve mechanism induced by the colloid cyst mass itself, impeding the flow of cerebrospinal fluid. Cases of sudden death in colloid cyst patients have been reported.<sup>9</sup> The cause and mechanism of sudden death is not well understood and is believed to be multifactorial and possibly secondary to pressure on sagittal sinus leading to brain edema and a cascade of events that ultimately lead to death.<sup>10</sup> Symptoms other than headache may be variable among symptomatic patients and may be gait abnormality, drop attacks, fits, memory disturbance, blurred vision or visual loss and behavioral changes.<sup>11</sup> In our study we reported 5 patients with vision changes, 2 patients with ataxia and one patient with urinary incontinence which is on contrary to a study conducted by Thomas L. Beaumont et al that consisted of 163 patients of colloid cyst out of which 98 patients were asymptomatic and out of the remaining 65 symptomatic patients 20% had vision changes, 20% ataxia and 3% urinary incontinence.<sup>12</sup> This change in results is attributed to relatively smaller sample size in our study.

Colloid cyst can be appreciated on CT as high density mass in third ventricle and diagnosed when signs and symptoms are related to it. Favorable prognosis is achieved via surgery and it is the treatment of choice.<sup>(13)</sup> Surgical intervention includes cerebrospinal fluid diversion with a shunt for signs and symptoms of acute hydrocephalus, microsurgical resection via craniotomy through trans-callosal approach or the trans-cortical approach, endoscopic resection or cyst aspiration and stereotactic aspiration. Recurrence is reduced by complete resection of the cyst.<sup>4</sup> Each procedure has its own merits and demerits where microsurgical resection has been associated with lower rate of cyst recurrence and higher rate of complete resection can be achieved but it is related to higher morbidity and longer hospital stay along with higher hospital cost as compared to endoscopic approach.<sup>14,15</sup> All our patients underwent endoscopic surgery removal. Resection was radiologically complete in 8 patients and incomplete in 3 patients. There was no recurrence at follow-ups at 3 and 6 months.

## CONCLUSION

Endoscopic approach to colloid cyst treatment is safe and effective with low complications rate.

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